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H48 THE *DE NOVO* DESIGN OF SYNTHETIC OXYGENASES.

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A ligand has been described previously in which four pendant pyridine groups attached to a central tertiary amine bind an Fe^{II} ligated to the single axial and four equatorial nitrogens of the complex. This ligand catalyzes the oxidation of a variety of substrates in the presence of hydrogen peroxide. The aim of the present work is to design and synthesize oxygenases specific for a narrow range of substrates. Proteins with substrate-specific binding pockets are being designed, and methodologies for covalently coupling the proteins through specific attachment sites to the catalytic ligand are being developed and will be described.